We claim:

1. An apparatus comprising a receiver, wherein:

said receiver has at least three degrees of freedom, wherein axes of said three degrees of freedom intersect; and

said receiver receives an end effector, wherein said end effector removably couples to said receiver.

2. The apparatus of claim 1 further comprising said end effector, wherein said end effector comprises a catheter.

3. The apparatus of claim 1 wherein two of said three degrees of freedom are rotational and one of said three degrees of freedom is translational.

4. The apparatus of claim 1 further comprising pseudo skin, wherein said receiver is disposed beneath said pseudo skin.

5. The apparatus of claim 4 further comprising said end effector, wherein said pseudo skin lies in a plane between said end effector and said receiver, and wherein to simulate a vascular access procedure, said end effector crosses said plane to couple with said receiver.

6. The apparatus of claim 1 further comprising:

a plurality of sensors, wherein said sensors:

monitor movement of said receiver with respect to said degrees of freedom, wherein said movement is indicative of the position and orientation of said end effector; and

generate signals indicative of said monitored movement; and

a data processing system, wherein said data processing system receives signals generated by said sensors.

7. The apparatus of claim 6 and further wherein said data processing system determines a position and orientation of said end effector based on said received signals.

8. The apparatus of claim 1 wherein said receiver comprises a force-feedback assembly, wherein said force-feedback assembly generates a resistance to movement of said end effector.

9. The apparatus of claim 8 wherein said force-feedback assembly comprises a motor.

10. An apparatus comprising:

an end effector; and

a movable member, wherein:

said end effector reversibly couples to said movable member to simulate a vascular access procedure; and

said movable member moves along a linear path in response to manipulation of said end effector.

11. The apparatus of claim 10 wherein said movable member is coupled to a cable.

12. The apparatus of claim 11 wherein said cable is coupled to a motor.

13. The apparatus of claim 12 wherein, responsive to a control signal, said motor generates a resistance to movement of said movable member.

14. The apparatus of claim 11 further comprising a plurality of pulleys disposed on a frame, wherein:

said pulleys engage said cable; and

said pulleys are arranged so that a tension in said cable aligns with said linear path along which said movable member moves.

15. The apparatus of claim 11 wherein said movable member comprises a pulley, wherein said movable member is coupled to said cable via said pulley.

16. The apparatus of claim 10 wherein said movable member comprises a magnet, and wherein said end effector couples to said movable member via said magnet.

17. The apparatus of claim 10 further comprising a housing, wherein said movable member is disposed within said housing and said end effector is disposed outside of said housing.

18. The apparatus of claim 17 further comprising pseudo skin, wherein said pseudo skin is substantially co-planar with a surface of said housing.

19. An apparatus comprising a receiver for an end effector, wherein said receiver comprises:

a frame;

an arrangement for providing two orthogonal axes of rotation for said frame, wherein said frame is coupled to said arrangement; and

a movable member, wherein:

said movable member receives an end effector during a vascular access procedure;

said movable member moves along a linear path in a region defined by said frame; and

said linear path intersects said two orthogonal axes of rotation of said frame.

20. The apparatus of claim 19 further comprising a force-feedback assembly, wherein said force-feedback assembly is coupled to said movable member, and wherein said force-feedback assembly imparts a force that resists forward motion of said movable member by said end effector.

21. The apparatus of claim 20 wherein said force-feedback assembly comprises:

a motor; and

a cable, wherein said cable is coupled to said motor.

22. The apparatus of claim 21 wherein said movable member includes a rolling-contact element, wherein said cable is coupled to said rolling-contact element.

23. The apparatus of claim 21 further comprising a counterbalance, wherein said counterbalance is coupled to said frame.

24. An apparatus comprising:

pseudo skin; and

a receiver for coupling to an end effector, wherein:

said receiver is disposed beneath said pseudo skin; and

said receiver has no offset degrees of freedom.

25. The apparatus of claim 24 wherein a magnetic force is used for coupling said end effector to said receiver.

26. The apparatus of claim 24 wherein said end effector is selected from the group consisting of a catheter, a needle, and a combined catheter and needle.

27. The apparatus of claim 24 wherein said receiver has three degrees of freedom.

28. The apparatus of claim 27 wherein two of said three degrees of freedom are rotational and one of said three degrees of freedom is translational.

29. The apparatus of claim 24 wherein said receiver comprises a movable member, and wherein said movable member is movable along a linear path.

30. The apparatus of claim 24 wherein said receiver comprises a movable member, and wherein said movable member is physically adapted for rolling contact during movement.

31. The apparatus of claim 24 wherein said receiver is gravitationally balanced.

32. The apparatus of claim 24 further comprising said end effector, wherein, until coupled to said receiver by a user, said end effector is disposed above said pseudo skin.

33. The apparatus of claim 24 wherein said receiver further comprises:

a movable member, wherein said movable member couples to said end effector; and

a force-feedback assembly, wherein said force-feedback assembly is coupled to said movable element.

34. An apparatus comprising:

pseudo skin; and

a receiver for coupling to an end effector, wherein:

said receiver is disposed beneath said pseudo skin; and

said receiver comprises a force-feedback assembly.

35. The apparatus of claim 34 wherein said receiver further comprises a movable member, and wherein:

said movable member is coupled to said force-feedback assembly;

said movable member couples to said end effector;

when said movable member is coupled to said end effector, movement of said end effector causes said movable member to move.

36. The apparatus of claim 35 further comprising a data processing system, wherein, responsive to a signal from said data processing system, said force-feedback assembly generates a force that opposes movement of said movable member and said end effector, in at least a first direction.

37. An apparatus comprising:

an end effector, wherein said end effector is a pseudo medical instrument;

pseudo skin, wherein said pseudo skin is physically adapted to enable said end effector to pass through it to a first region beneath said pseudo skin;

a data processing system, wherein said data processing system:

receives information indicative of a position of said end effector in said first region;

determines a position of a virtual end effector in a virtual anatomy based on said received information;

determines a resistive force that would arise if said virtual end effector were present at said position in said virtual anatomy; and

a force-feedback system, wherein said end effector is coupled to said force-feedback system when said end effector is in said first region, and wherein said force-feedback system generates said resistive force, and wherein said resistive force opposes movement of said end effector in said first region in at least some directions.